REMARKS

Claims 1, 3-8, 10, and 12-19 are all the claims presently pending in the application. New claim 19 has been added. No new matter has been added. Claim 2 has been cancelled without disclaimer to the subject matter therein.

It is noted that the claims amendments are made only for pointing out the claimed invention more particularly, and not for distinguishing the invention over the prior art, narrowing the claims, or for statutory requirements for patentability. Further Applicants specifically state that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 1-8, 10, and 12-17 are rejected under 35 U.S.C. § 102(e) as being anticipated by Tsuji et al. (hereinafter Tsuji). **Claim 18** stands rejected under 35 U.S.C. § 103(a) as allegedly being obvious with respect to Tsuji and in view Matsumoto et al. (hereinafter Matsumoto).

These rejections are respectfully traversed.

I.   THE CLAIMED INVENTION

An exemplary embodiment of the claimed invention, as defined by, for example, independent claim 1, is directed to a stereoscopic image processing apparatus for calculating a parallax between a pair of images that includes correlation evaluating means for evaluating a correlation of brightness between a first pixel block provided in one of the pair of images and a second pixel block provided in the other of the pair of images and region size changing means for changing a size of the first and second pixel blocks in evaluating said correlation. A size of said first and second pixel blocks is changed in accordance with an area where the first pixel block is located in the respective pair of images.

Another exemplary embodiment of the claimed invention, as defined by, for example, independent claim 8, is directed to a stereoscopic image processing apparatus for calculating a parallax between a pair of images, including correlation evaluating means for evaluating a correlation of brightness between a first pixel block provided in one of the pair of images and a second pixel block provided in the other of the pair of images, weighting factor means for applying weighting a factor to each of pixel constituting the first and second pixel blocks in evaluating the correlation, and weighting factor changing means for changing the weighting factor for the correlation evaluating means. The weight factor is established to 0 at a surrounding region away from a central region of the first and second pixel blocks to reduce the size of the first and second pixel blocks in a small pixel block comparison and the weight factor is established at 1 the surrounding region away from the central region of the first and second pixel blocks to increase the size of the first and second pixel blocks in a larger pixel block comparison.

Another exemplary embodiment of the claimed invention, as defined by, for example, independent claim 10, is directed to a stereoscopic image processing method of calculating a parallax between a pair of stereographic images, the method including evaluating a correlation of brightness between a first pixel block provided in one of the pair of stereographic images and a second pixel block provided in the other of the pair of stereographic images, and changing a size of the first and second pixel blocks. The changing of the first and second pixel blocks includes changing the pixel blocks in accordance with an area where the first pixel block is located.

Another exemplary embodiment of the claimed invention, as defined by, for example, independent claim 14, is directed to a stereoscopic image processing method of calculating a parallax between a pair of images, the method including evaluating a correlation of brightness

between a first pixel block provided in one of the pair of images and a second pixel block provided in the other of the pair of images, dividing the area into two areas, an upper area and a lower area, by a horizontal boundary line, applying a weighting a factor to each of pixel constituting the first and second pixel blocks for the in evaluating the correlation based on whether each the pixel is in the upper area or in the lower area, and changing over the weighting factor for the evaluating the correlation.

Further, in some embodiments, a boundary determining section may determine a boundary between two portions of the images. For example, the boundary may be the horizontal boundary between the road and objects above the road. The invention preferably calculates a parallax differently for objects on either side of the boundary. In other embodiments, the parallax is calculated differently based on ambient conditions, such as the weather.

Where conventional parallax calculations use large pixel blocks, a deviation may occur because when the correlation of brightness between paired pixel blocks is evaluated, a position of the identified pixel blocks on the comparison image is largely affected by a portion having a large brightness change. Alternatively, small pixel blocks may not be advantageous in low luminance situations.

The claimed invention, on the other hand, provides, among other things, "region size changing means for changing a size of said first and second pixel blocks for said correlation evaluating means, wherein a size of said first and second pixel blocks is changed in accordance with an area where said first pixel block is located in the respective pair of images," as recited in claim 1. This feature allows the claimed invention to enhance the reliability of calculating the parallax. *See* the Application, page 2, Line 7 to page 3, line 14.

II.   THE ALLEGED PRIOR ART REJECTIONS

The Office Action rejects claims 1-8, 10, and 12-17 under 35 U.S.C. §102(e) as being

anticipated by Tsuji. Applicant respectfully traverses these rejections for the following

reasons.

Claim 1

Independent claim 1 recites, among other things, region size changing means for

changing a size of first and second pixel blocks for the correlation evaluating means and a

size of the first and second pixel blocks is changed in accordance with an area where the first

pixel block is located in the respective pair of images.

On page 3 of the Office Action, the Examiner alleges that Tsuji discloses "region

changing means," as recited in claim 1. In addition, throughout the Office Action, with

respect to claim 2, the Examiner alleges that Tsuji discloses "wherein a size of said first and

second pixel blocks is changed in accordance with an area where said first pixel block is

located in the respective pair of images," as recited in claim 2. Claim 1 has been amended to

incorporate the subject matter of claim 2.

Contrary to the Examiner's allegation that FIG. 9 discloses the claimed invention,

FIG. 9 provides no disclosure that a size of first and second pixel blocks are changed in

accordance with respect to where those blocks are in the image. That is, the Examiner cannot

rely on the figures to allege that the "where," of an image determines the size of the pixel

block, as recited in claim 2. Furthermore, Tsuji discloses that the search area R2 is

determined by the size of target image R1, not by target area R1's actual location.

Accordingly, the Examiner has improperly rejected claim 1 in light of Tsuji.

Further, with respect to claim 1, Tsuji does not disclose or suggest claim 1 because

Col. 7, Lines 33-35 of Tsuji indicate that a position of search area R2 is set in the left image

on the basis of the coordinates of each vertex of the target image R1 and not that a size of

search area R2 is changed on the basis of a coordinate of target image R1.

Furthermore, with respect to claim 3, the Examiner alleges that Tsuji clearly discloses

an upper and lower section with a horizontal boundary line. Contrary to the allegations of the

Examiner, however, claim 3 recites, among other things, "a boundary determining section,

the boundary determining section being configured to divide the stereographic images into

two areas, an upper area and a lower area, defined by a horizontal boundary line." That is,

the Examiner relies on FIG. 5 to disclose a boundary determining section. Aside from

improperly relying on a figure to disclose or suggest an element, the Examiner ignores that

Tsuji discloses that FIG. 5 merely illustrates "explaining grey scale images obtained by the

respective cameras." These images include halftone (grey) areas and thick solidly lined areas

(high temperature/luminance levels). *See* Tsuji, Col. 5, Lines 22-35.

In addition, with respect to claim 3, Tsuji does not disclose or suggest that the

correlation evaluating area is changed at each area after horizontal division. That is, Tsuji

does not disclose or suggest that the correlation evaluating area is changed at each area after

horizontal division.

That is, no border is determined by Tsuji. Instead, a grey scale image has areas of

high and low luminance. Furthermore, FIG. 6 illustrates the result of a binarization process

of Tsuji that turns the entire screen black. *See* Tsuji, Col. 5, Lines 42-45. Accordingly, Tsuji

does not disclose or suggest a boundary determining section because the horizontal separation

apparent in FIG. 5 is a mere consequence of the type of image taken and not a result of a

processing section such as a "boundary determining section," as recited in claim 3.

Accordingly, because Tsuji does not teach every element as claimed in independent

claim 1, claim 1 is improperly rejected in light of Tsuji. Accordingly, Applicant submits that claim 1 is in condition for allowance. With respect to claims 3-7 and 15-19, which depend from independent claim 1, each of these claims contain all the limitations contained within claim 1 and are therefore also in condition for allowance.

Claim 8

Independent claim 8 recites, among other things, a stereoscopic image processing apparatus including correlation evaluating means for evaluating a correlation of brightness between a first pixel block provided in one of said pair of images and a second pixel block provided in the other of the pair of images, weighting factor means, and weighting factor changing means to change the weighting factor, wherein said weight factor is established to 0 at a surrounding region around a central region of said first and second pixel blocks.

Contrary to the allegations of the Examiner of pages 5 and 6 of the Office Action, Tsuji discloses binarization of the whole image based on the luminance, resulting in FIG. 6. That is, unlike claim 8 that changes "the weighting factor, wherein said weight factor is established to 0 at a surrounding region around a central region of said first and second pixel blocks," the changes are applied differently at all areas of the images.

Furthermore, in an encoding process, lines L1 to L8 are illustrated to determine an object based on a y-level association between corresponding y-level portions of lines L1 to L8. *See* Tsuji, Col. 5, Line 53 to Col. 6, Line 8. That is, vertically related pixels are scanned to determine an object. Contrary to claim 8, however, Tsuji does not perform the same computations of a setting weight factors at and around surrounding regions, as recited in claim 8.

Accordingly, because Tsuji does not teach every element as claimed in independent

claim 8, claim 8 is improperly rejected in light of Tsuji. Accordingly, claim 8 is in condition

for allowance.

Claim 10

Independent claim 10 recites, among other things, a stereoscopic image processing

method that includes evaluating a correlation of brightness between a first pixel block

provided and a second pixel block and changing a size of the first and second pixel blocks so

that the first and second pixel blocks change in accordance with an area in which the first

pixel block is located.

Contrary to independent claim 10, Tsuji does not teach or suggest changing a size of

the first and second pixel blocks so that the first and second pixel blocks change in

accordance with an area in which the first pixel block is located during an evaluating of a

correlation of brightness between a first pixel block and a second pixel block. Rather, Tsuji,

as described above with respect to claims 1 and 8, block matching does not disclose or

suggest "changing the pixel blocks in accordance with an area where the first pixel block is

located," as recited in independent claim 10.

Accordingly, because Tsuji does not teach or suggest every element as claimed in

independent claim 10, claim 10 is improperly rejected in light of Tsuji. Accordingly, claim

10 is in condition for allowance. With respect to claims 12 and 13, which depend from

independent claim 10, each of these claims contain all the limitations contained within claim

10 and are therefore also in condition for allowance.

Claim 14

Independent claim 14 recites, among other things, stereoscopic image processing

method of calculating a parallax between a pair of images, the method including evaluating a

correlation of brightness between a first pixel block provided in one of the pair of images and

a second pixel block provided in the other of the pair of images, dividing the area into two

areas, an upper area and a lower area, by a horizontal boundary line, applying a weighting a

factor to each of pixel constituting the first and second pixel blocks for evaluating the

correlation based on whether each the pixel is in the upper area or in the lower area, and

changing over the weighting factor for evaluating the correlation

Contrary to independent claim 14, Tsuji does not teach or suggest changing a size of

the first and second pixel blocks so that the first and second pixel blocks change in

accordance with an area in which the first pixel block is located during an evaluating of a

correlation of brightness between a first pixel block and a second pixel block. Rather, Tsuji,

as described above with respect to claims 1 and 8, block matching does not disclose or

suggest "dividing the area into two areas, an upper area and a lower area, by a horizontal

boundary line," as recited in independent claim 14.

Accordingly, because Tsuji does not teach or suggest every element as claimed in

independent claim 14, claim 14 is improperly rejected in light of Tsuji. Accordingly, claim

14 is in condition for allowance.

III.   NEW CLAIMS

Applicant has added new claim 19. Applicant respectfully submits that new claim 19

presents no new matter and is supported in the specification. Applicant submits that new

claim 19 is patentable over the cited references at least for analogous reasons to those set

forth above with respect to claims 1-8, 10, and 12-18.

IV.   FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims 1, 3-8, 10, and 12-19, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date: 9/7/8

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